



## Transportation Synthesis Report

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### Accelerated Construction Techniques

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**Bureau of Highway Construction**  
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*Transportation Synthesis Reports (TSRs) are brief summaries of currently available information on topics of interest to WisDOT technical staff in highway development, construction and operations. Online and print sources include NCHRP and other TRB programs, AASHTO, the research and practices of other state DOTs, and related academic and industry research. Internet hyperlinks in TSRs are active at the time of publication, but changes on the host server can make them obsolete.*

#### **Request for Report**

Accelerated construction—the use of methods for efficient design, scheduling and construction of highway structures—has gained considerable attention in the last few years. In response to the problematic convergence of increasing traffic volumes and conspicuous highway infrastructure decay, FHWA began promoting a “get in, get out, stay out” agenda for transportation in the mid-1990s. Key to this philosophy was the effort to accelerate innovation in highway construction, an idea emphasized in a 1996 TRB special report (249, *Building Momentum for Change*). In 1999, the Task Force on Accelerating Innovation in the Highway Industry began exploring accelerated construction, and in 2000 created an Accelerated Construction Technology Transfer Program jointly managed by FHWA and an AASHTO Technology Implementation Group. The RD&T Program was asked to summarize key research and practices related to these developments.

#### **Summary**

The Accelerated Construction Technology Transfer Program seeks to develop widespread use of accelerated construction techniques—streamlining project schedules, advancing materials innovations and techniques like fast-setting concrete, improving the preconstruction process, and more—through two-day workshops that draw together local officials and national experts to thoroughly evaluate a project from multiple perspectives. Experience has shown that reductions in construction-related congestion and road user costs occur concurrently with improved work zone safety and construction cost savings.

The FHWA and AASHTO sites on the subject are excellent reference points for insight into current practices and future plans in accelerated construction. We highlight activities in nine states frequently recognized for accelerated construction efforts. We then note a research project begun in August on accelerated bridge construction, which will closely study accelerated highway and bridge construction in a 10th state, Ohio. We conclude with a few articles from transportation publications that describe efforts in several states.

#### **FHWA**

The foremost site on accelerated construction methods and development, FHWA’s Accelerated Construction Technology Transfer Web site offers publications, case studies and reports.

<http://www.fhwa.dot.gov/construction/accelerated/>

**Spring 2004 ACTT Interim Report.** This site offers historic background, notes upcoming workshops around the country, and describes efforts in several states, including New Jersey, Montana and California.

<http://www.fhwa.dot.gov/construction/accelerated/ir04cont.htm>

**ACTT Workshops.** Used to initiate projects around the country, ACTT workshops offer a point of convergence for state transportation agencies interested in developments or best practices in accelerated construction techniques.

[http://www.fhwa.dot.gov/construction/accelerated/ir04\\_2.htm](http://www.fhwa.dot.gov/construction/accelerated/ir04_2.htm),  
<http://www.fhwa.dot.gov/construction/accelerated/agenda.htm> and  
<http://www.fhwa.dot.gov/construction/accelerated/question.htm>

A July 2003 *Focus* article describes workshops in Pennsylvania and Indiana, as well as accelerated construction on a Connecticut bridge—see <http://www.tfhr.gov/focus/july03/03.htm>—and the August 2002 issue includes several relevant articles (see <http://www.tfhr.gov/focus/aug02/index.htm>).

**“Accelerated Highway Construction: Workshop Series Summary,” *Transportation Research Circular E-C059*, December 2003.** This circular provides a thorough review of three ACTT workshops held in 2000 and 2002.  
<http://trb.org/publications/circulars/ec059.pdf>

## **AASHTO**

Through a Technology Implementation Group devoted to accelerated construction, AASHTO offers useful introductory materials, including presentations, fact sheets and more.

[http://www.aashtotig.org/focus\\_technologies/accel\\_construction/](http://www.aashtotig.org/focus_technologies/accel_construction/)

Highlights include:

- Fact sheet  
[http://www.aashtotig.org/focus\\_technologies/accel\\_construction/related\\_documents/accel\\_const\\_facts.pdf](http://www.aashtotig.org/focus_technologies/accel_construction/related_documents/accel_const_facts.pdf)
- 2003 TRB Annual Meeting PowerPoint presentation  
[http://www.aashtotig.org/focus\\_technologies/accel\\_construction/related\\_documents/january2003\\_presentation.pdf](http://www.aashtotig.org/focus_technologies/accel_construction/related_documents/january2003_presentation.pdf)

## **States**

The following states have gained attention for their successes in accelerated construction.

**California.** Caltrans has made accelerated construction a key component of its highway rehabilitation efforts. See <http://www.dot.ca.gov/research/roadway/llprs/llprs.htm>.

- Interregional Transportation Improvement Plan. Caltrans’ strategies for state infrastructure improvements employ accelerated construction as an integral technique. See page 5 of the ITIP overview for a description of funding and projects:  
<http://www.dot.ca.gov/hq/transprog/stip/2004%20ITIP/proposal5.htm>. This program is funded through an innovative financing method; see [http://www.dot.ca.gov/hq/innovfinance/garvee\\_bond/garvee\\_highlights.htm](http://www.dot.ca.gov/hq/innovfinance/garvee_bond/garvee_highlights.htm).
- Deep Soil Stabilization. Caltrans partnered with the Swedish Geotechnical Institute to obtain translations of Swedish research that developed deep soil mixing techniques for subbase stabilization. Though expensive, the methods work particularly well as a component of accelerated construction. [http://www.dot.ca.gov/research/researchreports/two-page\\_summaries/resnotes\\_swedish\\_rpts.pdf](http://www.dot.ca.gov/research/researchreports/two-page_summaries/resnotes_swedish_rpts.pdf)
- Pavement Rehabilitation Analysis Software. Accelerated and shortened construction practices are central to Caltrans’ use of rehabilitation analysis software called CA4PRS. See <http://www.dot.ca.gov/research/roadway/ca4prs/ca4prs.htm>, and §§1.1, 2 in [http://www.dot.ca.gov/research/roadway/ca4prs/ca4prsmodel\\_tech\\_021204.pdf](http://www.dot.ca.gov/research/roadway/ca4prs/ca4prsmodel_tech_021204.pdf).

**Florida.** Accelerated construction was a component of a mid-1990s innovative contracting law passed in Florida.  
[http://www.dot.state.fl.us/ProjectManagementResearchDevelopment/alt\\_contracts\\_statute.htm](http://www.dot.state.fl.us/ProjectManagementResearchDevelopment/alt_contracts_statute.htm)

- Hot In-Place Recycling. Road builders have worked with hot in-place recycling, a method emerging from emphasis on accelerated construction. See page 11 of the March 2003 *T-News*:  
<http://www.dot.state.fl.us/publicinformationoffice/tnews/March%202003%20TN%20.pdf>.
- Palm Beach County I-95. Achieved mostly through careful scheduling of roadwork, accelerated construction is cited as a significant component of reconstruction plans that will continue through 2008. <http://www.i95wpb.com/>

**Indiana.** InDOT has been using accelerated construction practices since the mid-1980s; see <http://www.in.gov/doc/compare/WorldHighways.html>. By improving streets and intersections in Indianapolis,

InDOT paved the way for successful traffic diversion off I-65 and I-70 to accelerate mainline construction in its Hyperfix project. See the article in the May/June 2004 *Public Roads* at <http://www.tfhr.gov/pubrds/04may/06.htm> (states are in alphabetical order).

**Minnesota.** Accelerated construction became a cornerstone of Mn/DOT's 2003 strategic plan—see “Building Faster” in <http://www.dot.state.mn.us/information/statplan00/strategicplan.pdf>. In June 2003, Minnesota designated up to \$900 million over five years toward accelerating highway construction efforts. See <http://www.dot.state.mn.us/financing/background.html>.

- Highway 14. One of the 12 projects designated for acceleration is this expansion; originally scheduled for 2005 to 2009, accelerated construction commitments have moved the schedule up to 2004 to 2006. <http://www.newsline.dot.state.mn.us/archive/04/aug/11.html#3>
- I-494. The I-494 design-build project is another of the 12, and it also features a 2004-2006 timeline. <http://www.dot.state.mn.us/metro/news/04/08/03i494.html>

**Montana.** Accelerated construction was seen as an important component of MDT's US 93 wildlife fencing efforts—see page 2, the “January 2004” section: <http://www.mdt.state.mt.us/research/docs/research%5Fproj/wildlife%5Fcrossing/progress%5Fmar04.pdf>.

**New Jersey.** New Jersey used an ACTT workshop to develop accelerated construction plans for a bridge on the New Jersey turnpike. See the article in the January/February 2004 issue of *Focus*: <http://www.tfhr.gov/focus/jan04/03.htm>.

**South Carolina.** SCDOT's accelerated construction page offers a brief description of the practice, and links to Web sites devoted to descriptions, images and documents for 11 construction projects that employed the building technique. See <http://www.dot.state.sc.us/doing/acceleratedselect.html>.

**Texas.** Project Pegasus, the reconstruction of two interstates in Dallas, is something of a poster child for major accelerated construction projects. Visit the project Web site at <http://www.projectpegasus.org/>. The October 2003 issue of *Focus* reported on the project; see <http://www.tfhr.gov/focus/oct03/01.htm>. Project Pegasus was the focus of an ACTT workshop in 2003; see <http://www.fhwa.dot.gov/construction/accelerated/pegasus.htm>.

**Washington.** Washington State has embraced accelerated construction for several Seattle-area projects.

- Evergreen Point Floating Bridge. SR 520 is a critical commuter route in the Seattle area. See the May 2004 *Focus* article on an ACTT workshop on Washington's Evergreen Point floating bridge project at <http://www.tfhr.gov/focus/may04/04.htm>; a WSDOT briefing paper, <http://www.wsdot.wa.gov/commission/AgendasMinutes/agendas/2004/May19/Item10.pdf>; and a project team meeting summary at <http://www.wsdot.wa.gov/projects/SR520Bridge/LibraryFiles/2004/04-04-04/520ExecSummary.pdf>.
- Everett Interstate Carpool Expansion. Accelerated construction is being used on an I-5 carpool lane expansion for this Seattle suburb. [http://www.wsdot.wa.gov/Regions/Northwest/news/2004/April19\\_I5HOV.htm](http://www.wsdot.wa.gov/Regions/Northwest/news/2004/April19_I5HOV.htm)
- Alaskan Way Viaduct. Another critical Seattle arterial, the Alaskan Way Viaduct carries traffic through Seattle on State Route 99, the main alternative highway to I-5. The viaduct runs along Elliot Bay on the city's western shore, and faces extensive seawall and highway reconstruction. WSDOT recently diverted \$10 million from right-of-way funding to design in order to accelerate construction. <http://www.wsdot.wa.gov/projects/viaduct/qpr/dec2003.htm>

## **Research**

Based in Madison, the Midwest Regional University Transportation Center began in August a study of accelerating bridge construction. A one-year research project by Sam Salem of the University of Cincinnati includes surveys of all 50 states and close study of Ohio efforts. See the project description at <http://www.mrutc.org/research/0504/index.htm>.

## **Transportation Publications**

The following publications offer a sampling of the many transportation newsletters and journals that have in the last few years featured accelerated construction techniques.

**Roads and Bridges, June 2004.** An article on how Kentucky used improved mapping and surveying techniques to accelerate preconstruction, and the three key steps the agency believes are central to success in accelerated preconstruction.

<http://www.roadbridges.com/rb/index.cfm/powergrid/rfah=|cfap=/fuseaction/showArticle/articleID/5232>

**Roads and Bridges, June 2003.** In elevating, widening and improving intersections and interchanges of Route 28 in Pittsburgh, a busy four-lane highway running tightly along the Allegheny River, PennDOT employed accelerated construction methods.

<http://www.roadbridges.com/rb/index.cfm/powergrid/rfah=|cfap=/fuseaction/showArticle/articleID/4216>

**Roads and Bridges, April 2003.** A wide-ranging introduction to accelerated construction efforts around the country; several states are cited.

<http://www.roadbridges.com/rb/index.cfm/powergrid/rfah=|cfap=/fuseaction/showArticle/articleID/4010>

**Focus, August 2002.** Several articles in this issue discuss accelerated construction. Two not mentioned above include one advocating the technique (“The Time for Accelerated Construction Is Now”) and another on Oklahoma DOT’s success in quickly responding to a bridge problem (“Accelerated Bridge Repairs: Meeting the Challenge in Oklahoma”). <http://www.tfhrc.gov/focus/aug02/index.htm>